COLORADO WILDLIFE SCIENCE
Ecological Research, Management & Consulting

TECHNICAL MEMORANDUM

To: Gary Tennenbaum, Director, Pitkin County Open Space & Trails
Lindsey Utter, Planning and Outreach Manager, Pitkin County Open Space & Trails

From: Jonathan Lowsky, Principal Biologist

Date: December 26, 2018

Re: Beaver Occupancy Survey

The North Star Nature Preserve (North Star) is excellent beaver (*Castor canadensis*) habitat. Beavers typically inhabit streams with a gentle gradient (< 15%) and in wide valleys (at least wider than the stream channel) (Bierly 1972). In Colorado, beavers' preferred forage is woody members of the plant family Salicaceae (i.e., genus *Populus* – aspens, cottonwoods and genus *Salix* – willows) (Pastor and Naiman 1992). The presence of beavers enhances the heterogeneous complex of wet meadows and riparian shrublands and increases species richness on the landscape. For example, Wright et al. (2002) noted that beaver-modified areas may contribute as much as 25% of the species richness of herbaceous species. Naiman et al. (1988) note that beaver-influenced streams are very different from those not impacted by beaver activity by having numerous zones of open water and vegetation, large accumulations of detritus and nutrients, more wetland areas, having more anaerobic biogeochemical cycles, and in general are more resistance to disturbance. Neff (1957; in Knight 1994) estimated that a Colorado valley with an active beaver colony had eighteen times more water storage in the spring and an ability to support higher streamflow in late summer than a drainage where beaver were removed. It is apparent that active beaver colonies are very important for ecosystem development in riparian systems such as those at North Star where beaver activity has resulted in the flooding of former upland areas and creation of new side channels to the river. These areas have been colonized by herbaceous hydrophytic vegetation, as well as woody riparian plants such as alders (*Alnus incana* ssp. *tenuifolia*), birch (*Betula glandulosa*), and willows.

Beavers have a relatively low biotic potential due to small litter size and a long juvenile development period. Beavers, however, are strong dispersers, and populations can recover quickly from local reductions when dispersal corridors are maintained. Key conservation elements for beavers on OST lands are, therefore, protection and enhancement of aquatic and riparian habitats by management of water resources and riparian vegetation.

Following many years of aggressive beaver control by the former owners and neighbors, the beaver population at North Star has been steadily increasing over the past decade or so. In 2014, Golder Inc. (Golder Associates 2014) recommended that, in order to assist with the adaptive management of the property, surveys should be conducted at North Star to determine the number and location of active lodges, more accurately locate important forage areas, and identify other areas of beaver activity.

I. 2018 SURVEYS

In 2018, Colorado Wildlife Science, LLC (CWS) initiated a survey effort to locate and document all

active and inactive lodges, foraging areas, and other features important to the long term persistence of beavers at North Star. The surveys were implemented following protocols developed by the U.S. Forest Service Region 2 (Beck et al. 2009) and the Johnson Creek (Oregon) Watershed Council (Johnson Creek Watershed Council 2016). Two CWS biologists surveyed the entire river reach (~2.8 mi) and side channels at North Star (Figure 1), recording all beaver lodges and other signs of activity such as bank tunnels, chewed trees, mud slides, and scent mounds. Each substantial sign of beaver activity encountered was documented via data sheets and GPS (Most were photographed as well). If a lodge was found, it was further investigated to determine whether it was active.

II. RESULTS

The 2018 survey effort located 2 active freestanding surface lodges, 2 active bank lodges, 1 inactive freestanding lodge, and substantial beaver activity throughout North Star's river reach (Table 1; Figure 1). This equates to a density of approximately 1 lodge per 0.7 river miles. In addition, we identified 15 somewhat discrete areas important to beaver ecology at North Star (Figure 1). Most of

Table 1. American beaver activity at North Star

Latitude	Longitude	Bank	Slide	Tunnels	Chew	Canal	Scent	Lodge	Comments
39.176035	-106.79709239	East	Y	N	Y	N	N	N	Many recent chews
39.17570	-106.79707	East	Y	N	Y	N	Y	Y	Active slide
39.17486	-106.79741	East	N	N	Y	N	N	N	Major foraging area
39.173359	-106.79514166	East	Y	N	Y	N	N	N	Slide & many chews
39.17228	-106.79301	East	Y	Y	Y	Y	Y	Y	Large surface lodge N of beach, S of obs deck
39.17038	-106.79266	East	Y	N	Y	N	Y	N	Large active foraging area
39.17011	-106.79181	East	Y	N	Y	N	Y	N	Major foraging area with 3 slides, scent mounds
39.16807	-106.79071	East	Y	N	Y	N	Y	N	Foraging area – multiple slides, many chews
39.16689	-106.78972	East	Y	N	Y	N	Y	N	Foraging area
39.16555	-106.78994	East	Y	N	Y	N	Y	N	Important forage area starts here…
39.16509	-106.79085	East	Y	N	Y	Y	Y	N	…and goes to here
39.16556	-106.79172	East	Y	N	Y	N	N	N	Foraging
39.16580	-106.79214	East	Y	N	Y	N	Y	N	Foraging
39.16543	-106.79383	East	Y	N	Y	N	Y	N	Multiple felled trees
39.16366	-106.79233	East	Y	Y	Y	N	Y	Y	Large surface lodge near S border; newer
39.165494	-106.792992	West	Y	N	Y	N	Y	N	Slide with scent mound & recent chews
39.164909	-106.793126	West	Y	N	Y	N	N	N	Slides & mounds; sand dragged into water
39.165131	-106.794599	West	Y	N	Y	N	Y	N	3 food caches
39.164080	-106.79469	West	Y	N	N	Y	N	N	Old, inactive lodge
39.163710	-106.794032	West	N	N	Y	Y	N	N	Large slide between ponds
39.163665	-106.79314062	West	N	N	N	N	Y	N	Modest amount of fresh chew
39.163641	-106.79349369	West	Y	N	N	N	N	N	Large scent mound
39.171560	-106.79280	West	N	N	Y	Y	N	N	Active previous season; some fresh
39.170258	-106.79305938	West	N	N	Y	Y	N	N	Active canal

Table 1. American beaver activity at North Star

Latitude	Longitude	Bank	Slide	Tunnels	Chew	Canal	Scent	Lodge	Comments
39.170050	-106.791880	West	N	N	Y	Y	Y	N	Heavy activity; willow piles
39.169541	-106.79170391	West	N	Y	Y	Y	N	N	Well used canal
39.167321	-106.79053376	West	N	N	Y	N	N	N	Old dam site washed out
39.166020	-106.792520	West	Y	N	Y	N	N	N	Heavy chew activity on large cottonwoods

these areas are active forage areas marked by canals, chews, and scent piles and 3 are activity areas associated with the active and inactive lodges. Beavers at North Star clearly preferred willow species (*Salix* spp.) with some narrowleaf cottonwood (*Populus angustifolia*) selected as well. The number of cut stems was a small percentage of available of willows and cottonwoods within the forage areas.

III. DISCUSSION & MANAGEMENT IMPLICATIONS

Our survey found that the increase in beavers, beaver influenced areas, and beaver dens or lodges have paralleled the improved health of the riparian ecological system at North Star. Although it is difficult to determine how many beavers occupy the river reach at North Star, it is likely that each of the 2 freestanding lodges are occupied by a single beaver family or colony. Beaver colonies usually consist of an adult pair along with the young of the current and previous years (Olson and Hubert 1994, Longcore 2007). Some studies have estimated that their activities can influence up to 40% of the total length of 2nd to 5th order streams[1] (Naiman et al. 1988, Olson and Hubert 1994).

Plants: The current density of beavers appears to be sustainable and beavers are likely improving ecological conditions at North Star. Beaver cutting stimulates vigorous sprouting in willow and beaver and willow can persist indefinitely in a stable equilibrium. Empirical evidence from the headwaters of the Colorado River in Rocky Mountain National Park (RMNP) showed willow populations can be entirely dependent on the dams, canals, and ponds built by beaver, which can place water and sediment on high terraces beyond the reach of other fluvial processes (Westbrook et al. 2006, Westbrook et al. 2011). Response to beaver foraging depends on plant life history traits. For example, mountain willow (*S. monticola*) in RMNP recovered 148.4% of their pre-cut stem number during the first growing season after all stems were removed to simulate beaver herbivory (Baker et al. 2005). In addition, willows respond to beaver cutting with a burst of growth that increases stem production both in terms of numbers of stems per plant and rate of elongation (Kindschy 1985, Kindschy 1989). Under natural conditions beaver and willow are capable of coexisting on a stream reach indefinitely because beaver shift centers of foraging which allows willows to recover in a continuing cycle (Hall 1960, Baker 1995, Smith 2007).

Wildlife: Beavers improve many aspects of riparian habitats for wildlife at North Star. Ponds, canals, and tunnels created by beavers improve water quality, increase riparian area and store water during dry periods (Olson and Hubert 1994, Baker and Hill 2003). A number of studies have documented higher bird abundance and diversity associated with beaver activity in comparison with sites without beavers (Medin and Clary 1990, Grover and Baldassarre 1995, Chandler et al. 2009, Aznar and

[1] The Roaring Fork River at North Star is a 5th order stream.

Desrochers 2015). In one case, bird densities in active beaver habitats were shown to be three times that of adjacent riparian habitats (Collins 1993). Forage production is improved around beaver influenced streams, which increases grazing capabilities for wild and domestic ungulates (Schulte and Müller-Schwarze 1999, Cooke and Zack 2008). Allowing for and encouraging beaver recolonization in appropriate areas is widely viewed as a cost-effective wetland and riparian habitat restoration strategy, especially when compared to the cost and challenge of other human-engineered restoration alternatives (Burchsted et al. 2010).

Conservation Issues: Historically, the greatest threats to beavers in the Roaring Fork Valley were overharvesting by the unregulated fur trade from the early 1800's to the early 1900's, coupled with extensive degradation of riparian areas by livestock overgrazing and other human land uses during the late 1800's to early 1900's (Boyle and Owens 2007). The most serious remaining threat to beavers region-wide is loss and degradation of habitat to human land uses including water manipulations, livestock grazing in riparian areas, and urban and agricultural development in riparian areas. Excessive browsing of woody riparian vegetation by wild ungulates, particularly elk and moose, can also reduce the quality and abundance of beaver food (Kay 1994). Trampling and browsing by large herbivores can suppress aspen reproduction along streams and reduce beaver food availability (Rutherford 1964 in Boyle and Owens 2007) .

Management Recommendations:

1. Protect cottonwood seedlings and saplings from browsing ungulates.
2. Restore the flood regime on North Star to support seed-based reproduction of cottonwoods.
3. Restore or allow the continued re-establishment of the cottonwood-willow riparian community along the river where it is absent.
4. Avoid disturbance of side channels where beavers are active.
5. Establish 50 foot terrestrial buffer zones and river-based quiet zones around lodges, dens, and activity (e.g., foraging) areas. Exclude recreationists from those areas.

IV. LITERATURE CITED

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BACKGROUND & QUALIFICATIONS

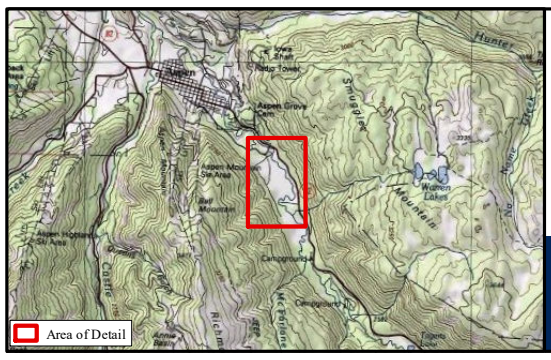
Colorado Wildlife Science, LLC (CWS) is a small wildlife and ecological consulting firm based in Basalt, Colorado, specializing in wildlife research, management, and monitoring, ecological assessments, wetland & riparian delineations, conservation easement baseline inventories, ecological planning, habitat management, and ecological restoration. CWS applies a scientifically sound approach to biological resource studies and management. Our work combines professional integrity and strong academic training with extensive experience working for government, private, and non-profit clients. With an extensive network of professional collaborators that includes plant ecologists, foresters, hydrologists, and soil scientists, CWS leverages the collective knowledge of experienced professionals working toward practical, effective and cost saving solutions.

CWS provides expert services to a diverse array of clients. Since we are a small company, personal attention is ensured. We combine full in-house GIS (ArcGIS) with real-time, sub-meter GPS to provide state-of-the-art spatial data, analyses, maps, and presentations. We have prepared Biological Assessments and Biological Evaluations, and contributed to EAs and EISs. CWS has worked with large private firms such as Jacobs; Carter & Burgess; Mead & Hunt; Parsons; Amec Foster Wheeler; SE Group; and SAIC as well as city, county, state, and federal agencies such as City of Aspen, City of Glenwood Springs, Pitkin County, Town of Basalt, Colorado Department of Transportation, and Roaring Fork Transportation Agency. CWS has prepared over 70 conservation easement baseline and Present condition reports for 8 different conservation organizations in 5 western Colorado counties.

Owner and Wildlife Biologist Jonathan Lowsky, M.S. Wildlife Biology, Colorado State University, has a broad range of knowledge. With more than 26 years of professional experience with federal (US Forest Service), state (Colorado Division of Wildlife), and county agencies as well as two major universities (Colorado State University and University of Washington), Jonathan's career has focused on a diverse array of wildlife from bighorn sheep, elk, and songbirds to northern goshawks, flying squirrels, small mammals, and spotted bats. Mr. Lowsky's experience includes biological assessments and evaluations for NEPA compliance, conservation planning, GIS mapping and modeling, wildlife research, and ecological monitoring design and implementation, as well as wetland and riparian delineations, evaluations, and restoration. He has authored management plans and conservation easement baseline inventory reports and published scientific papers. An expert birder, experienced tracker, certified wetlands delineator, trained fluvial geomorphologist, and passionate observer of wildlife, Jonathan has spent countless hours studying and appreciating Colorado's diverse ecological communities. A detailed description of Mr. Lowsky's professional experience and references are available. For additional information, please visit our website at www.coloradowildlifescience.com.

V. FIGURES

106°48'0"W
106°47'50"W
106°47'40"W
106°47'30"W
106°47'20"W
39°10'32"N
39°10'24"N
39°10'16"N
39°10'8"N
39°10'0"N
39°9'52"N
N



Pitkin County Open Space & Trails
American Beaver Survey

Pitkin County, CO

Figure 1. Results

Legend:

- Property Boundary
- Important Beaver Activity Area
- Inactive Lodge
- Documented Beaver Activity
- Active Lodge or Den

0 50 100 200 300 400 500 Feet

1 inch = 350 feet

Coordinate System:
NAD 1983 StatePlane Colorado Central
Datum: North American 1983

Base Layer Source:
Pitkin County GIS
Digital Orthophotos
2014

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106°47'40"W
106°47'30"W
106°47'20"W
39°10'16"N
39°10'8"N
39°10'0"N
39°9'52"N
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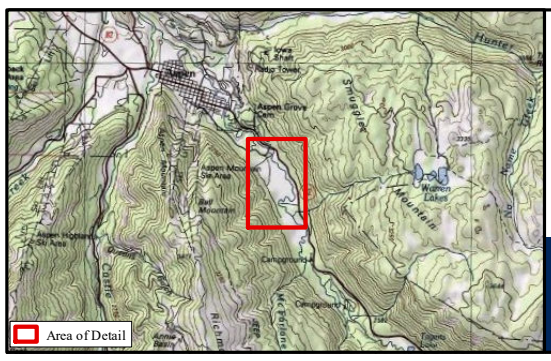

Pitkin County Open Space & Trails
American Beaver Survey

Pitkin County, CO

Figure 2. Photopoints

Legend:

- Property Boundary
- Important Beaver Activity Area
- 14 Photopoint Location & Number

0 50 100 200 300 400 500 Feet

1 inch = 243 feet

Coordinate System:
NAD 1983 StatePlane Colorado Central
Datum: North American 1983

Base Layer Source:
Pitkin County GIS
Digital Orthophotos
2014

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VI.PHOTOS

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Felled narrowleaf cottonwood - recent
Date/Time	4/26/2018 11:23:56 AM
File Name	P1020448.JPG
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 39"
Map Datum	WGS-84
Photopoint	1

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Another recently felled narrowleaf cottonwood
Date/Time	4/26/2018 11:24:08 AM
File Name	P1020449.JPG
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 39"
Map Datum	WGS-84
Photopoint	1

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Recently felled quaking aspen
Date/Time	4/26/2018 11:24:18 AM
File Name	P1020450.JPG
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 39"
Map Datum	WGS-84
Photopoint	1

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Chew - willow sp.
Date/Time	4/26/2018 11:36:20 AM
File Name	P1020452.JPG
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 38"
Map Datum	WGS-84
Photopoint	4

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Active forage near trail
Date/Time	4/26/2018 11:36:37 AM
File Name	P1020453.JPG
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 38"
Map Datum	WGS-84
Photopoint	4

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Recently felled narrowleaf cottonwood
Date/Time	4/26/2018 11:37:21 AM
File Name	P1020454.JPG
Latitude	N 39° 09' 56"
Longitude	W 106° 47' 34"
Map Datum	WGS-84
Photopoint	6

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide
Date/Time	5/10/2018 12:13:37 PM
File Name	IMAG4293.jpg
Latitude	N 39° 10' 01"
Longitude	W 106° 47' 23"
Map Datum	WGS-84
Photopoint	8

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Dam on side channel - comprised mostly of willow
Date/Time	5/10/2018 12:13:47 PM
File Name	IMAG4294.jpg
Latitude	N 39° 10' 01"
Longitude	W 106° 47' 23"
Map Datum	WGS-84
Photopoint	8

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Heavy chew activity
Date/Time	5/10/2018 12:20:10 PM
File Name	IMAG4295.jpg
Latitude	N 39° 09' 56"
Longitude	W 106° 47' 24"
Map Datum	WGS-84
Photopoint	10

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Fresh cuttings
Date/Time	5/10/2018 12:24:07 PM
File Name	IMAG4296.jpg
Latitude	N 39° 09' 55"
Longitude	W 106° 47' 25"
Map Datum	WGS-84
Photopoint	11

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Lodge - active bank lodge on west bank from opposite bank
Date/Time	5/10/2018 12:55:29 PM
File Name	IMAG4297.jpg
Latitude	N 39° 09' 52"
Longitude	W 106° 47' 41"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Active surface lodge near south boundary
Date/Time	5/10/2018 1:09:26 PM
File Name	IMAG4301.jpg
Latitude	N 39° 09' 49"
Longitude	W 106° 47' 32"
Map Datum	WGS-84
Photopoint	14

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	North active surface lodge
Date/Time	10/16/2018 10:20:47 AM
File Name	P1020458.JPG
Latitude	N 39° 10' 20"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	
Date/Time	10/16/2018 10:21:02 AM
File Name	P1020459.JPG
Latitude	N 39° 10' 20"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Another tunnel at north lodge
Date/Time	10/16/2018 10:21:24 AM
File Name	P1020460.JPG
Latitude	N 39° 10' 20"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Beaver observed in this tunnel
Date/Time	10/16/2018 10:21:49 AM
File Name	P1020462.JPG
Latitude	N 39° 10' 20"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide and chew activity
Date/Time	
File Name	N3.JPG
Latitude	N 39° 09' 54"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide and chew activity
Date/Time	
File Name	N2.JPG
Latitude	N 39° 09' 54"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide and chew activity
Date/Time	
File Name	N1.JPG
Latitude	N 39° 09' 54"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide, scent mound, chew
Date/Time	
File Name	M2.JPG
Latitude	N 39° 09' 56"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide, scent mound, chew
Date/Time	
File Name	M1.JPG
Latitude	N 39° 09' 56"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Old, inactive lodge remnants
Date/Time	
File Name	P2.JPG
Latitude	N 39° 09' 53"
Longitude	W 106° 47' 41"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Old, inactive lodge
Date/Time	
File Name	P1.JPG
Latitude	N 39° 09' 53"
Longitude	W 106° 47' 41"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Large slide between ponds
Date/Time	
File Name	Q2.JPG
Latitude	N 39° 09' 51"
Longitude	W 106° 47' 41"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Large slide between ponds
Date/Time	
File Name	Q1.JPG
Latitude	N 39° 09' 51"
Longitude	W 106° 47' 41"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Chew near active slide
Date/Time	
File Name	R.JPG
Latitude	N 39° 09' 49"
Longitude	W 106° 47' 39"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Slide
Date/Time	
File Name	T.JPG
Latitude	N 39° 10' 13"
Longitude	W 106° 47' 35"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Cuttings
Date/Time	
File Name	U.JPG
Latitude	N 39° 10' 12"
Longitude	W 106° 47' 31"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Recent chew on mature willow
Date/Time	
File Name	V.JPG
Latitude	N 39° 10' 10"
Longitude	W 106° 47' 30"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	South active lodge from opposite bank
Date/Time	
File Name	VV.JPG
Latitude	N 39° 09' 49"
Longitude	W 106° 47' 33"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Dam attempt remnants
Date/Time	
File Name	W3.JPG
Latitude	N 39° 10' 03"
Longitude	W 106° 47' 26"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Heavy chew activity
Date/Time	
File Name	W2.JPG
Latitude	N 39° 10' 03"
Longitude	W 106° 47' 26"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Chew & food cache
Date/Time	
File Name	W1.JPG
Latitude	N 39° 10' 03"
Longitude	W 106° 47' 26"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Heavy chew on large cottonwoods
Date/Time	
File Name	X.JPG
Latitude	N 39° 09' 58"
Longitude	W 106° 47' 33"
Map Datum	WGS-84
Photopoint	39

2018 American Beaver Survey

Attributes	
Title	North Star Nature Preserve
Subject	2018 American Beaver Survey
Comment	Chew from previous season with some fresh
Date/Time	
File Name	S.JPG
Latitude	N 39° 10' 18"
Longitude	W 106° 47' 34"
Map Datum	WGS-84
Photopoint	39